

Environmental Protection Agency

§ 86.112-91

with the Society of Automotive Engineers, Inc. (SAE) Recommended Practice J1151, "Methane Measurement Using Gas Chromatography," December 1991, 1994 SAE Handbook—SAE International Cooperative Engineering Program, Volume 1: Materials, Fuels, Emissions, and Noise; Section 13 and page 170 (13.170), which is incorporated by reference.

(A) This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51.

(B) Copies may be inspected at U.S. EPA, OAR, 401 M St., SW., Washington, DC 20460, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. Copies of this material may be obtained from Society of Automotive Engineers International, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

(c) *Other analyzers and equipment.* Other types of analyzers and equipment may be used if shown to yield equivalent or superior results and if approved in advance by the Administrator.

[56 FR 25771, June 5, 1991, as amended at 58 FR 33209, June 16, 1993; 59 FR 48505, Sept. 21, 1994; 59 FR 50073, Sept. 30, 1994]

EFFECTIVE DATE NOTE: At 75 FR 25677, May 7, 2010, § 86.111-94 was amended by revising paragraph (b) introductory text, effective July 6, 2010. For the convenience of the user, the revised text is set forth as follows:

§ 86.111-94 Exhaust gas analytical system.

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(b) *Major component description.* The exhaust gas analytical system, Figure B94-7, consists of a flame ionization detector (FID) (heated, 235 °±15 °F (113 °±8 °C) for methanol-fueled vehicles) for the determination of THC, a methane analyzer (consisting of a gas chromatograph combined with a FID) for the determination of CH₄, non-dispersive infrared analyzers (NDIR) for the determination of CO and CO₂, a chemiluminescence analyzer (CL) for the determination of NO_x, and an analyzer meeting the requirements specified in 40 CFR 1065.275 for the determination of N₂O (required for 2015 and later model year vehicles). A heated flame ionization detector

(HFID) is used for the continuous determination of THC from petroleum-fueled diesel-cycle vehicles (may also be used with methanol-fueled diesel-cycle vehicles), Figure B94-5 (or B94-6). The analytical system for methanol consists of a gas chromatograph (GC) equipped with a flame ionization detector. The analysis for formaldehyde is performed using high-pressure liquid chromatography (HPLC) of 2,4-dinitrophenylhydrazine (DNPH) derivatives using ultraviolet (UV) detection. The exhaust gas analytical system shall conform to the following requirements:

* * * * *

§ 86.112-91 Weighing chamber (or room) and microgram balance specifications.

(a) *Ambient conditions*—(1) *Temperature.* The temperature of the chamber in which the particulate filters are conditioned and weighed shall be maintained to within ±10 °F (6 °C) of a set point between 68 °F (20 °C) and 86 °F (30 °C) during all filter conditioning and filter weighing. A continuous recording of the temperature is required.

(2) *Humidity.* The relative humidity of the chamber in which the particulate filters are conditioned and weighed shall be maintained to within ±10 percent of a set point between 30 and 70 percent during all filter conditioning and filter weighing. A continuous recording of the temperature is required.

(3) The environment shall be free from any ambient contaminants (such as dust) that would settle on the particulate filters during their stabilization.

(4) It is required that two unused reference filters remain in the weighing room at all times in covered (to reduce dust contamination) but unsealed (to permit humidity exchange) petri dishes. These reference filters shall be placed in the same general area as the sample filters. These reference filters shall be weighed within 4 hours of, but preferably just prior to, the pre- and post-test sample filter weighings.

(5) If the weight of either of the reference filters changes between pre- and post-test sample filter weighings by more than ±2.0 percent of the test average primary filter loading (recommended minimum of 0.5 milligrams) or ±0.010 milligrams, whichever is

greater, then the post-test sample filter weights are invalid. However, the post-test weighing procedure can be repeated to obtain valid weights within the time limits as specified in § 86.139.

(6) The reference filters shall be changed at least once per month, but never between pre- and post-test weighings of a given sample filter. The reference filters shall be the same size and material as the sample filters.

(b) *Microgram balance specifications.* The microgram balance used to determine the weights of all filters shall have a precision (standard deviation) and a readability of one microgram.

(c) *Other procedures and equipment.* Other procedures and equipment may be used if shown to yield equivalent or superior results and if approved in advance by the Administrator.

[56 FR 25773, June 5, 1991]

§ 86.113-04 Fuel specifications.

This section includes text that specifies requirements that differ from § 86.113-94. Where a paragraph in § 86.113-94 is identical and applicable to this section, this will be indicated by specifying the corresponding paragraph and the statement “[Reserved]. For guidance see § 86.113-94.”.

(a) *Gasoline fuel.* (1) Gasoline having the following specifications will be used by the Administrator in exhaust and evaporative emission testing of petroleum-fueled Otto-cycle vehicles, except that the Administrator will not use gasoline having a sulfur specification higher than 0.0045 weight percent. Gasoline having the following specification or substantially equivalent specifications approved by the Administrator, must be used by the manufacturer in exhaust and evaporative testing except that octane specifications do not apply:

Item	ASTM test method No.	Value
Octane, Research, Min.	D 2699	93
Sensitivity, Min. ....	.....	7.5
Lead (organic), max. g/U.S. gal. (g/liter)	D 3237	0.050 (0.013)
Distillation Range:	D 86.	
IBP ¹ :deg. F (deg. C) .....	.....	75–95 (23.9–35)
10 pct. point: deg.F (deg.C) .....	.....	120–135 (48.9–57.2)
50 pct. point: deg.F. (deg.C) .....	.....	200–230 (93.3–110)
90 pct. point: deg.F (deg.C) .....	.....	300–325 (148.9–162.8)
EP, max: deg.F (deg.C) .....	.....	415 (212.8)
Sulfur, weight pct.	D 1266	0.0015–0.008
Phosphorous, max. g/U.S. gal (g/liter)	D 3231	0.005 (0.0013)
RVP ^{2,3}	D 3231	8.7–9.2 (60.0–63.4)
Hydrocarbon composition:	D 1319.	
Olefins, max. pct. ....	.....	10
Aromatics, max. pct. ....	.....	35
Saturates .....	.....	Remainder

¹ For testing at altitudes above 1,219 m (4000 feet), the specified range is 75–105 deg. F (23.9–40.6 deg. C).

² For testing which is unrelated to evaporative emission control, the specified range is 8.0–9.2 psi (55.2–63.4 kPa).

³ For testing at altitudes above 1,219 m (4000 feet), the specified range is 7.6–8.0 psi (52–55 kPa).

(2) For light-duty vehicles, light-duty trucks and medium-duty passenger vehicles certified for 50 state sale, and for Tier 2 and interim non-Tier 2 vehicles whose certification is carried over from the NLEV program or carried across from the California LEV I program, “California Phase 2” gasoline having the specifications listed in the table in this section may be used in exhaust emission testing as an option to the specifications in paragraph (a)(1) of

this section. If a manufacturer elects to utilize this option, the manufacturer must conduct exhaust emission testing with gasoline having the specifications listed in the table in this paragraph (a)(2) and in the case of interim non-Tier 2 LDV/Ts and interim non-Tier 2 MDPVs whose certification is carried over from the NLEV program or carried across from California LEV I program certification the Administrator must also conduct exhaust emission